The Construction of "0" Gauge Vehicles for the Beginner.

The Southern Railway New 25-Ton Goods Brake Van.

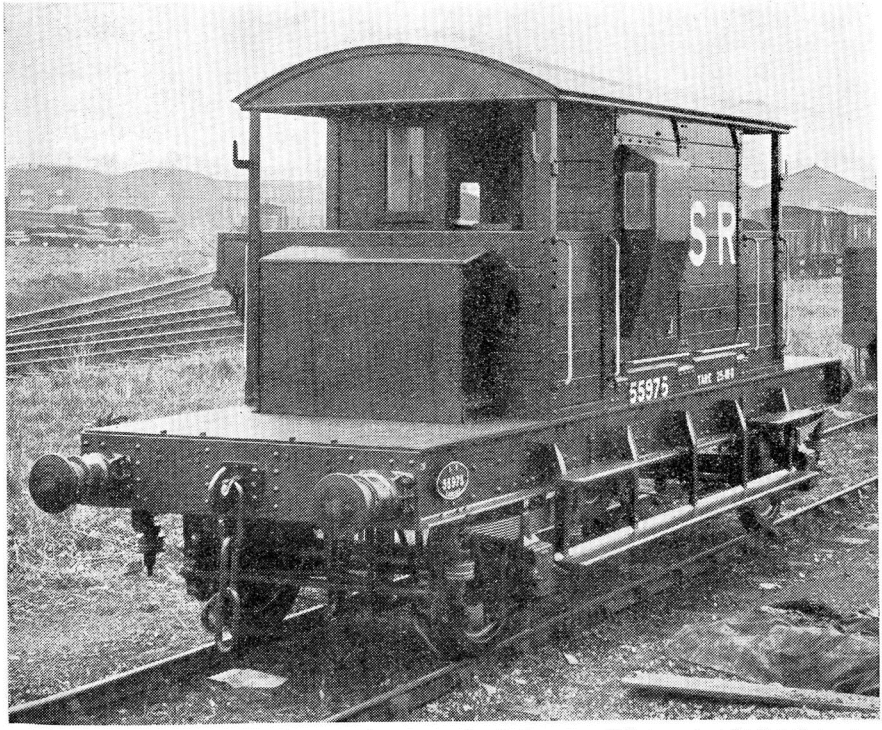
By "SPARKS."

(*Continued from page* 270.)

Use and Characteristics

ITS use is obvious. Mr. Maskelyne gave a small drawing and description of this vehicle in MODEL RAILWAY NEWS for October, 1928, and a photograph and description appeared in the *Locomotive*, August 1928.

From the model-making point of view it is not an easy one to make. Its outstanding characteristics are its symmetry, with steel platforms at each end, its very deep solebars, its two diagonally placed guards' lookouts, and its extreme narrowness. This latter fact is not easy to overcome, consequently all below body work has to be made of metal. For those who wish to make a good model, and maintain proportions, a lot of soldering is necessary, though thin wood and cardboard could be used skilfully by those who cannot yet work in metal, but they will have considerable difficulty in fitting wood solebars and making them look



The official Southern Railway photograph of the new 25-ton goods brake van.

like the deep U-channel-section solebars as in the original, and yet keep within 48 mm. wide. Measure up any " 0 " gauge vehicle over the outside of the solebars, and my meaning will be clear.

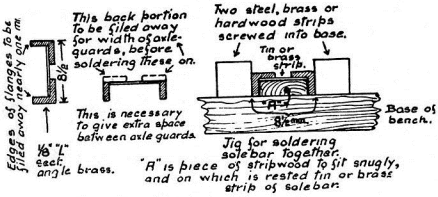

This back portion To be filed away for width of axle-guards, before soldering these on.
Two steel, brass or hardwood strips screwed into base.
Tin or brass strip.
Edges of flanges to be filed away nearly one mm.
8½
This is necessary To give extra space between axle guards.
Base of bench.
⅛" "L" steel angle brass.
Jig for soldering solebar together.
"A" is piece of stripwood to sit snugly, and on which is rested tin or brass strip of solebar.

Diagram No. 3.—Showing details of metal solebars and jig for soldering together.

Materials Required

Metal.—Thick tin (or brass) sheet, approximately 1 mm. thick for floor; L-section ⅛-in. brass for top and bottom members of solebar, and for the eight corner pillars (uprights); L sections 3/32-in. brass for sides of verandah doors and 1/16-in. for strip under roof. Fairly thick tin or brass strip 7½ mm. wide for main solebar member, and other tin for sand boxes, top of verandah ends, and for guards' look-outs, also for central uprights on bodywork; ⅛ in. U brass for step supports.

Wood.—Floor ⅛ in. thick; centre compartments sides ⅛ in. thick; ends of centre compartment and verandahs just over 1/16 in. thick.

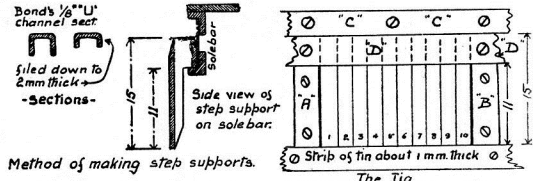
Component Parts.—Long coach-type axle guards (more anon); steel disc wheels, buffers and couplings.

Constructional Notes

The first thing to do is to cut out dead square the floor, 166 mm. by 48 mm. This must be absolutely flat, filing edges to get these square.

The next are the solebars (*see* Diagram 3). As a trial I made these of ¼-in. tin strip with two ⅛-in. L section brass each side, but when soldered these came to 8 mm. overall width. The solebars are 8½ mm. deep, so the centre member (tin or brass strip) will have to be ¼ in. plus ½ mm. (equals 7 mm wide). File these square at the ends, 167 mm. long (allowing for filing off square at ends when finished and soldered together with axleguards on). Make a jig as in the sketch 8½ mm. wide, with a strip of wood under the L-section brass, on which the tin (or brass) strip rests when being soldered. Use plenty of solder and see that the flanges of the ⅛-in. L are true and flat. When that is done, file away the two edges of the L brass protruding, by about 1 mm. (*see* the section of the solebar in Diagram 4). Owing to there being little available room between the solebars, every scrap of space is required, so the back flanges of the L brass will have to be filed flat with the tin (or brass) strip where the axle guards are to be soldered on. Wheelbase, 112 mm. This will give nearly another 2 mm. width. Axle guards: Messrs. R. F. Stedman's long coach type can be fitted, but the backs will have to be filed down to at least half their original thickness before soldering on. Actually these can be used and still keeping to 48 mm. wide. Messrs. Holtzapffel & Co. sell a brass-backed axle guard which is thinner than the cast white-metal one, and Messrs. R. F. Stedman's double axle guards can be cut in half and used, which answers the same purpose.

Have a trial fitting with the solebars and wheels in position, noting that the outer flanges of the solebars come



Jig:- 1 to 10 are the 10 step supports. "A" and "B" are the two sides -tight against supports and made of brass or tin 1mm thick. "C" is back of jig. "D" is just under 4 mm wide and holds supports down while portions showing are filed down.

Diagram No. 4.—Details of the jig and method of making step supports.

flush with the steel floor, and no wider.

If satisfied, solder one solebar in position, fit wheels and then solder the other.

Buffer beams can be made of the same thickness tin as used for the floor, boring holes for buffers and couplings before fitting. Note these protrude beyond the floor. These can be soldered on with a section of the $\frac{1}{8}$-in. brass as angle iron, to underneath of floor (*see* Diagram No. 7).

Steps and Step Supports.—*See* Diagram 4. Bonds sell $\frac{1}{8}$-in. U-channel-section brass. File this down as shown to 2 mm. wide. Cut off ten pieces all exactly 15 mm. long. A jig will have to be made, and even if it takes two hours it will save its cost in time later. The undersides have to be filed away for 11 mm., and the outsides tapered top and bottom.

Messrs. Winteringhams, of Northampton, have made me some steps in brass, planed from the solid with back lip. Centre of step supports 23 mm. apart. File nicks in the back of the steps exactly the width of the step supports and solder step supports to step, when the whole step with step supports can easily be soldered to the solebar. In the sketch of the jig in Diagram 4, the 10 step supports should be put in so that five face one way and five the other—for reason *see* photograph, as some face one way and some the other. It is best to place them in the jig facing inwards.

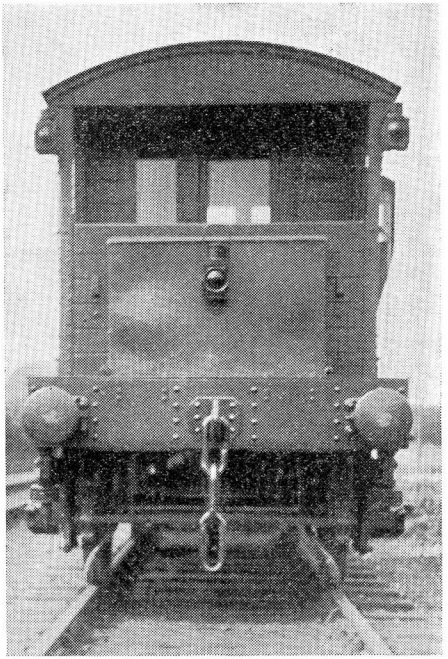
The Wooden Body Work

Note that in Diagrams 1 and 2 some of the dimensions start from the top of the solebars. If the steel floor is approximately 1 mm. thick, deduct 1 mm. from the dimensions where necessary. Remember this, or there will be snags later.

In Diagram 5 it will be noticed that the width of the body is 46 mm. This is because the L brass corner pillars are approximately 1 mm. wide, and on looking at the photograph it will be seen that no metal work protrudes over the steel floor except the guards' lookouts and the handrails.

This body work will have to be made as a complete unit in itself, and when finished, screwed or bolted to the metal underframe from underneath.

First make the two sides of the centre compartment, length 56 mm. *minus* thickness of the two pieces of wood used for the ends of the centre compartment.



A front view of the latest S.R. 25-ton goods brake van taken by Mr. H. Clack,a guard on the S.R.

Next, the floor. Length 98 mm. *minus* the thickness of wood used for the verandah ends. Central width 46 mm. *minus* thickness of wood of sides of the central compartment, and ends (verandah widths each end) wider, as wood used for verandahs is thinner than that which is used for sides of centre compartment. It is essential that the floor shall be made accurately and square.

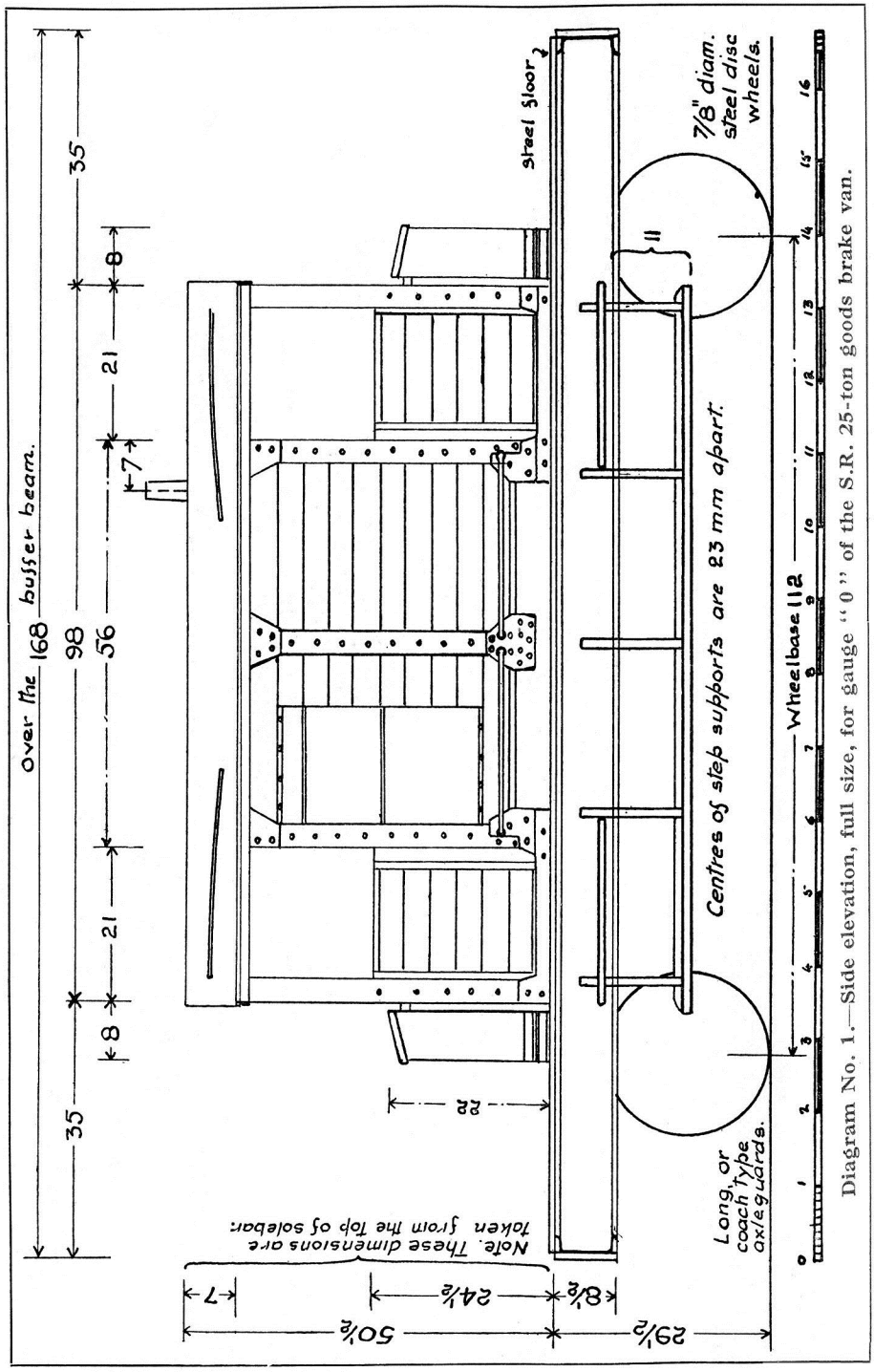


Diagram No. 1.—Side elevation, full size, for gauge "0" of the S.R. 25-ton goods brake van.

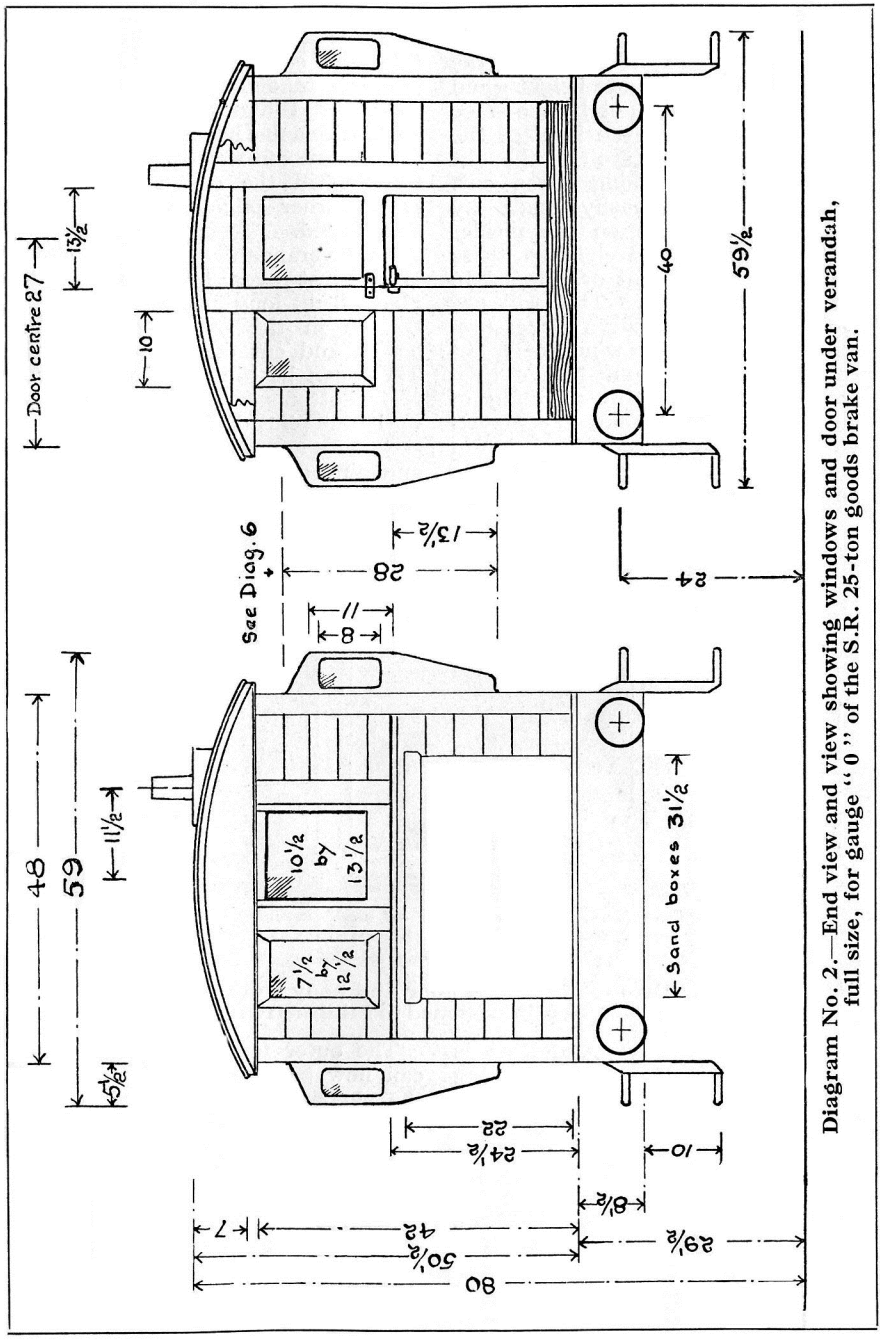


Diagram No. 2.—End view and view showing windows and door under verandah, full size, for gauge "0" of the S.R. 25-ton goods brake van.

The two ends, with windows in, of the centre compartment are next made. Note that this rests on the wood floor, therefore height and window heights will not be the same as if measured from the level of the steel floor. A little care and thought is required in marking these out. Windows can be easily made by boring a small hole on the insides at the corners and joining these with a razor-blade cut or chipped to the requisite length. This will not split the wood. File edges to measurements. Note door window is not central and is 1 mm. higher than the other. Groove in planking of sides and ends of central compartment, and doors and windows in ends. Shape the sides at the top to the curve of the roof. Cut out the hole for the guard's lookout as is shown in Diagrams 5 and 6, cutting against the grain of the wood first, boring holes as for windows.

The four inner L pillars have next to be fitted. The outer edges come down to the steel floor, and to which are soldered two pieces of 3/32-in. L brass, which can be seen in Diagrams 1, 5 and 6, and in the photograph. The handrails are in these and can be soldered on before these are fixed to corners of the body work. There is a groove all along the top (like the one in the G.W.R. cattle van) to take 1/16-in. L brass (*see* Diagrams 1 and 6). This can be made with a fine hacksaw. The 1/16-in. L brass must fit well in. Don't solder this in till the outer four $\frac{1}{8}$-in. L brass corner pillars are in position and pinned.

The verandah is the next job. Wood just over 1/16-in. thick and about 8 in. long and $23\frac{1}{2}$ mm. wide. Groove in the planking the whole length and cut off requisite lengths. These can be pinned to the floor at their bottoms and the four L brass uprights pinned to them. These six pieces are not half so easily fitted and pinned and glued (with Durofix) into position as it would look.

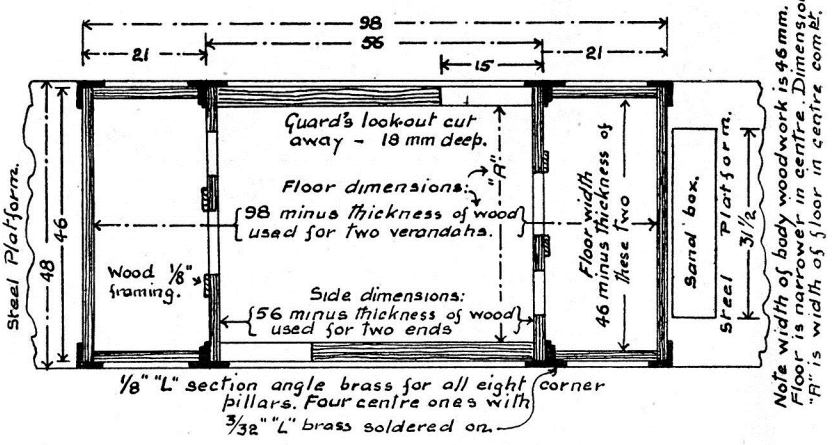

98
56
21
21
15
Guard's lookout cut away - 18 mm deep.
Floor dimensions:
"A"
98 minus thickness of wood used for two verandahs.
Floor width 46 minus thickness of these two
Sand box.
Steel Platform.
3½
Steel Platform.
48
46
Wood ⅛" framing.
Side dimensions:
56 minus thickness of wood used for two ends
⅛" "L" section angle brass for all eight corner pillars. Four centre ones with 3/32" "L" brass soldered on.
Note width of body woodwork is 46 mm. Floor is narrower in centre. Dimension "A" is width of floor in centre comp't.

Diagram No. 5.—Details of wooden floor and body work for the model S.R. 25-ton goods brake van (dimensioned in millimetres for gauge " 0 ").

The outer four angle brass pillars can now be fitted, noting they take the shape of the curve of the roof at the tops. The 1/16-in. L brass should fit flat at the top of these if the inner flange is filled off.

Details

The ends of roof can be made of thin tin or brass sheet, curved to shape of roof, and soldered into position at the same time the 1/16-in.

L brass is soldered to the four outer L uprights.

Guards' Lookouts

See Diagram 6. The dimensions in this differ from those shown in the two end elevations of the vehicle, for the reason that the four seen there show outside the L uprights, which are approximately 1 mm. thick, so these guards' lookouts will have to be 6 mm. wide—side view. They are quite simply made of tin and soldered together.

Sand Boxes

These are 22 mm. high at back and 31½ mm. wide. Can be made of wood with thick tin (or brass) top, filed round at edges and pinned down, running some solder over the pin heads (after these have been filed flat) to hide the pin heads. Bonds' ⅛-in. U-channel-section brass, which was used for the step supports, can be pinned at the bottoms. These sand boxes are 7 mm. thick and stand away from the body by 1 mm. Pin and screw from underneath.

Handrails

Thin wire bent to shape, small holes bored in through metal or wood to take them and well pushed home. All of them go through metal, so a touch of solder can be used for strength.

Lamp Brackets

The four on the end L uprights can be made of strip tin 1/16-in. wide, but actually it is easier to file them Z shaped from a tin strip 6½ mm. high and ¼ in. wide. Soldered in position after roof is on.

Mr. H. Clack's photograph of the latest S.R. 25-ton goods brake van.

Glazing

Very thin glass can be used, or celluloid, talc or mica. The easiest way is to make a piece the size of the inside of the ends of the central compartment and slip it in from the top, after making brackets for it, marking out the windows and painting it, leaving out the windows. The guards' lookouts can be glazed, but it is not easy. Cut strips of the material used for glazing and solder in position with small strips of tin about 3/32 in. wide. The guards' lookouts look very much better glazed.

The inside of the centre compartment must be painted before the roof is in position.

Roof

This is best made of suitable thick-

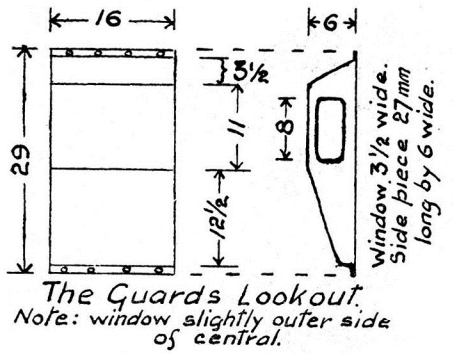
ness brass sheet, bent to shape and soldered into position.

Chimney

This should be made of brass, turned from the solid and soldered in position. I had to get the local garage to do this, as I have no lathe.

Painting

Sides.—Southern goods brown; coach umber, *i.e.*, 50 per cent. raw umber and 50 per cent. burnt umber mixed—brown.



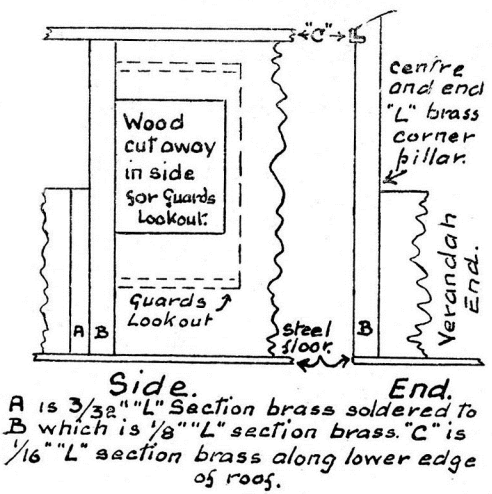


Diagram No. 6.—Full-size details of the side and guard's lookout.

Ends.—Venetian red—standard.

Sand Boxes.—Venetian Red all over.

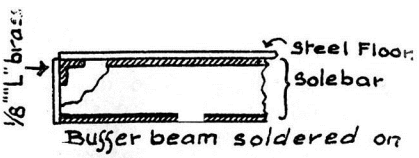


Diagram No. 7.—Section showing construction of the buffer beams.

Roof, Lettering and Handrails.—White.

Underframe Gear, Wheels, and all Metal Work below body.—Black.

Inside Verandah. — Partition (in which are the windows) red down to level of side doors; remainder of interior of verandah, brown, except inside roof, which is white.

Latest Photographs

The two photographs reproduced on pages 335 and 339 are (as mentioned in "Notes of the Month" in the October issue) by Mr. H. Clack. They show one of the latest vehicles, having the extra lamp iron on back of sand box. Mr. Clack also states that the desk has been taken away from inside and a coal bunker put in.

Next Article

This will deal with the underframe and brake gear details of the G.W.R. "Damo A" and Bogie Milk or Fish Vans "Siphon G."

A Run on a Bank!

The heavy freight train at last topped the summit of the long and steep gradient on a mountain section through the Rockies. In a cloud of steam and smoke the big engine jarred to a standstill with its train, and the driver climbed down to consult the brakeman, who was new to that division of the line.

"Blowed if I know what's up with the old gal; she's played the devil coming up that grade to-day," said the driver. His feelings, however, can be well imagined when the brakeman replied: "Well, I myself was so scared of the whole lot running backwards, I've had the brakes on all the way up!"